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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/882,480

06/14/2001

Hsiang-Lan Lung

15313.1

8120

7590

04/04/2005

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EXAMINER

PIZARRO CRESPO, MARCOS D

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/882,480

Applicant(s)

LUNG, HSIANG-LAN

Examiner

Marcos D. Pizarro-Crespo

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 22-25 and 32-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 and 32-36 is/are allowed.
- 6) ☒ Claim(s) 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: 15313.1
Filing Date: 6/14/2001
Claimed Foreign Priority Date: none
Applicant(s): Lung
Examiner: Marcos D. Pizarro-Crespo

DETAILED ACTION

This Office action responds to the amendment filed 3/15/2005.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after the final rejection mailed 11/16/2004. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/15/2005 has been entered.

Acknowledgment

2. The amendment filed 3/15/2005, responding to the Office action mailed 3/15/2005, has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-10, 22-25, and 32-36.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 22, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Aoki (US 6191441).

5. Regarding claim 22, Aoki shows (see, e.g., fig. 16A and 17DV) all aspects of the instant invention including a ferroelectric memory cell comprising:

- a semiconductor substrate **1** having:
 - a single source **5** that serves as the source for both the ferroelectric memory cell and an adjacent ferroelectric memory cell (see, e.g., fig. 16A)
 - a drain **6** that is spaced apart from the source **5** and from drains and sources of adjacent ferroelectric memory cells (see, e.g., figs. 16A and 16B)
 - a channel between the source **5** and the drain **6** (see, e.g., fig. 17DV)
- a gate oxide substantially covering the drain **6**, source **5**, and channel (see, e.g., fig. 17DV)
- a ferroelectric gate unit comprising:
 - a top electrode **19**
 - a layer **20** of ferroelectric material
 - a bottom electrode **18**
- means for controlling the polarization of the layer **20** of ferroelectric material

wherein:

- the drain **6** is not shared with the adjacent ferroelectric memory cells (see, e.g., fig. 16B)
 - the gate unit is positioned on the gate oxide (see, e.g., fig. 17DV)
 - the gate unit overlies the entirety of the drain **6** (see, e.g., fig. 16A)
 - the gate unit overlies only a portion of the source **5** (see, e.g., fig. 16A)
6. Regarding claim 23, Aoki shows that the means for controlling the polarization comprises an electrical connection **26** between the drain and the bottom electrode **19** (see, e.g., fig. 16A).
7. Regarding claim 25, Aoki shows the memory cell further comprising a lower polysilicon layer **4** deposited between the gate unit and the gate oxide (see, e.g., fig. 16A).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of McMillan (US 5559733).

11. Regarding claim 24, Aoki shows most aspects of the instant invention (see, e.g., paragraphs 5-7 above). Aoki also shows the means for controlling the polarization further comprising an upper conductive layer **28** made of aluminum deposited on top of the gate unit such that electrical communication is established between the top electrode **19** and the upper conductive layer **28**. Aoki, however, fails to show the upper conductive layer made of polysilicon. McMillan (see, e.g., col.5/ll.41-45), on the other hand, teaches that polysilicon and aluminum are equivalent materials for their use in conductive layers.

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art to use either polysilicon or aluminum in Aoki's upper conductive layer because these were recognized in the semiconductor art as equivalent materials for their use in conductive layers, as taught by McMillan, and the selection of any of these known equivalents would have been within the level of ordinary skill in the art.

Allowable Subject Matter

12. Claims 1-10 and 32-36 are allowed.

Response to Arguments

13. Applicant's arguments with respect to claims 22-25 have been considered but are moot in view of the new ground(s) of rejection.

Comments

14. Claims 11-21 and 26-31 were identified as “withdrawn” in the amendment of 3/15/2005. The correct status identifier should have been, however, “cancelled” as these claims were cancelled in the amendment of 7/8/2002. Appropriate correction is required in reply to the present Office action.

Conclusion

15. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 872-9306**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Marcos D. Pizarro-Crespo** at **(571) 272-1716** and between the hours of 9:30 AM to 8:00 PM (Eastern Standard Time) Monday through Thursday or by e-mail via Marcos.Pizarro@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (571) 272-1705.

17. Any inquiry of a general nature or relating to the status of this application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through

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Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

18. The following list is the Examiner's field of search for the present Office Action:

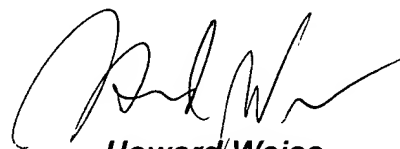
Field of Search	Date
U.S. Class / Subclass(es): 257/295,314-326,389; 438/3,279; 365/145	3/25/2005
Other Documentation: PLUS Analysis	9/14/2002
Electronic Database(s): EAST (USPAT, EPO, JPO, PGPub)	3/25/2005

Marcos D. Pizarro-Crespo

Patent Examiner

Art Unit 2814

571-272-1716

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Primary Examiner

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